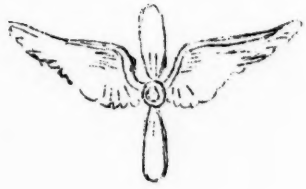
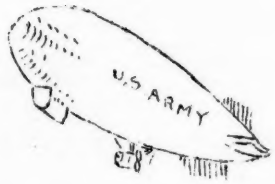
AIR CORPS



News Letter



— ISSUED BY —
OFFICE OF THE CHIEF OF THE AIR CORPS
WAR DEPARTMENT
WASHINGTON

VOL. XVII July 31, 1933 No. 7.

VOL. XVII AIR CORPS NEWS NO.7

Information Division, Air Corps — July 31, 1933 — Munitions Building, Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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AIRMAN'S FAREWELL TO HIS AIRPLANE

Quite a fitting companion piece for the "Cowboy's Farewell to his Pony," comes this Airman's Farewell to His Airplane from the pen of Captain Ralph H. Wooten, Air Corps, Military Attache at Santiago, Chile, who sent it to the Field Service Section, Materiel Division, to be filed with the permanent flying time report of the No. 29-288.

The records show that this airplane was sent to Captain Wooten on January 4, 1930, and has been in constant use by him ever since. Many pilots will feel and understand the sincerity underlying this bit of writing who could not have put like sentiments of their own into expression.

NUMBER 29-288

On the records you are only a number, a thing without life, an Airplane, made of steel, wood, cloth, rubber, copper, and other materials. You are like hundreds of others to the man in the central office who keeps the records of the planes that are built, are flown for a span of years, or months, or days, and finally dropped as worn out in fair wear and tear in the service of their country, or crashed, or burned. The worthy craftsmen who planned you, and who spent many hours of perfect workmanship in building you, have long since forgotten your existence. But to me you are a friend - a companion tried and true. Since the day in April over three years ago when you first roared to life on the temporary runway of the Los Cerillos Airport, and we together soared aloft into the blue skies of Chile, you have never failed me. You have borne me over the deserts and rivers and mountains and valleys of that beautiful country, over the endless wastes of the Patagonian pampas, and the unexplored forests and mountains of Southern Chile. Together we have looked down on the beautiful, wild and wonderful scenery of that land of romance and mystery - Tierra del Fuego- the land of fire. Together we have been to the southernmost point of the Americas, and you are possibly the only airplane which has made this flight of exploration under your own power. You braved the hurricane winds of this bleak region with the same courage that carried you thru hours of supreme effort around the forbidding ice-covered peaks and snow-filled canyons of the Cordillera of the Andes searching for lost brothers. Others may forget, but you and I will carry memories to our graves of the mornings when we went together over those vast wastes of snow and ice around the forbidding craigs searching for the Frenchman, Guillemet, and later, when your hangar mate, the "San Jose," and our friends on board disappeared, how you responded to the first warning and were the first to lead in the hopeless search of those barren, frozen expanses for your missing brother. At any time during those long cold hours at high altitude a failure would have meant death, and your stout heart never hesitated.

You have taken me over the boiling craters of erupting volcanoes, where we could look down into the revolting bowels of the earth, and over the beautiful lakes of the south. We have landed together in strange places, many of which never dreamed of being used as a landing place for an airplane. You have taken me thru storms and fog and rain. You have responded to my every wish, whether it be looping, or rolling, or spinning, or climbing over some almost impassable obstacle.

Ambassadors and Ministers of powerful nations have been proud to ride with us, and have taken the opportunity to see the beauties of the scenery from your high viewpoint.

You have been true and faithful, and now as the time comes when we must part I want you to know that I shall miss you as I would one of my dearest friends. I hate to think of you being flown by some strange pilot, who may not appreciate your sterling worth, and who may mar your life by wrecking you in some strange field in some far away country. I hate to think of you being used as a machine of war by some ambitious country trying to wrest territory from a neighbor or in defense of its own land.

But the time has come when we must part, and I alone will shed a tear as I send in your papers to be filed as the official death with the dead records of Airplane Number 29-288.

Adios, mi amigo!

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AERIAL GUNNERY AND BOMBING

Routine aerial gunnery and bombing were carried on by the organizations of the 5th Composite Group, Luke Field, T.H., recently. The 23rd Bombardment Squadron completed its aerial gunnery and bombardment schedule, and the other organizations have practically completed theirs with the exception of newly arrived officers.

A special allotment of ammunition was received by the Group for use in training enlisted men in flexible gunnery. This will include all crew chiefs and specially selected noncommissioned officers in the Bombardment squadrons.

Most of the routine work of the 6th Pursuit Squadron, Wheeler Field, T.H., during May and June was on the machine gun range at Waimanalo. This practice was preparatory to the annual record firing in July. Some excellent scores were turned in.

The 19th Pursuit Squadron, Wheeler Field, was also engaged in preliminary machine gun practice on ground targets at the Waimanalo Gunnery Range in preparation for the regular gunnery season.

During May, the 76th Pursuit Squadron, Albrook Field, Canal Zone, fired the aerial target phase of the gunnery course. The highest score was fired by 2nd Lieut. J.V. Crabb, with 291.

The 24th Pursuit Squadron, Albrook Field, practiced bombing during May, and turned in many excellent scores. The average for the squadron was 205. Second Lieut. Neal E. Ausman led with a score of 222.

Firing on tow targets was started in the month of June.

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V-6481, A.C.

MOTORIZED OBSERVATION BALLOON

TESTS were recently conducted at Scott Field, Belleville, Ill., on a Motorized Observation Balloon for the purpose of determining the practicability of converting an observation balloon into an airship, in order that it may be transported from one observation point to another. The present observation balloon must be towed on a cable when such maneuvers are to be carried out and the advantages of flying the balloon through the air rather than maneuvering it over the ground are very apparent because of the rapidity with which a change in locations can be accomplished.

The tests were highly satisfactory considering the fact that all the tests were conducted on improvised and altered equipment which did not require any expenditure of funds.

The craft can be flown as an ordinary observation balloon and then hauled to the ground; the cable disconnected and a small power car attached, after which it can be operated as an airship. The change from a balloon to an airship can be made in about ten minutes. The fact that a craft of these characteristics is entirely practical will greatly improve the efficiency of observation balloons in that the arrangement allows a flexibility of operations that really permits two distinct applications of the same craft; that of an observation balloon and an airship.

When used as an observation balloon its operation will be similar to present practice, except that the balloon can be flown to the rear zone and secured to a small mooring mast rather than mooring close to the ground as was done during the war, which system required special preparations for such a mooring. It can be flown on a cable along sea coast stations for observation purposes and then be converted into an airship for harbor patrol work, under which condition it would have considerable advantage over surface craft that might be used for the same purpose.

In view of the satisfactory results thus far obtained with the experimental model, consideration is now being given to the development of a service test model with which the several applications may be more thoroughly investigated.

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WARMING-UP APRONS COMPLETED AT ALBROOK FIELD

The concrete warming-up aprons have been completed at Albrook Field, Canal Zone. These aprons extend the entire length of the hangar line and are 60 feet wide in front of each hangar and 30 feet wide between them. The warming up strips proper extend out from the hangars and are 400 feet long and 150 feet wide. A 50-foot strip connects these strips at the far end. This strip is 950 feet long and can be used for take-offs. It is doubtful, however, if it will be used for landings, due to its being rather short and narrow. Also the soft condition of the shoulders during the rainy season would make it extremely dangerous in case of a ground loop. These strips fill a long wanted need at Albrook and are indispensable for operation during the long rainy season, but do not facilitate continuous operation. An all-weather runway seems to be the only logical solution to this problem.

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Temporary roads of crushed rock are under construction at Albrook Field, Canal Zone, connecting the hangar line with Headquarters and Post Engineering Hangars. With these roads it is hoped to eliminate the necessity of moving about through a foot or so of mud during the long rainy season.

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D.F.C. PRESENTED TO CAPTAIN BRUNER

By the Wright Field Correspondent

It was with the impressive simplicity governing most military ceremonies that the award of the Distinguished Flying Cross was made to Captain Donald L. Bruner at Wright Field on the morning of June 28th.

Within the ellipse in front of the Administration Building, a double line of Wright Field officers formed before the flag staff. Friends of Captain Bruner, fellow workers, and the families of officers stood about the edge of the ellipse to witness the conferring of the honor in which all were so deeply interested. Promptly at 10:30 o'clock, General George Van Horn Moseley, Corps Area Commander, accompanied by General Pratt, Chief of the Materiel Division, arrived at the ellipse and advanced to meet Captain Bruner who stepped forward through the line of officers to the center of the circle. There were the usual words of citation, the pinning of the Cross, the salute, and clasping of hands in congratulation.

So very simple, and still somehow to all those witnesses was conveyed anew the sense of splendor in any one's life of earning a decoration at the hands of one's Government. Also, it renewed in the memory of the associates of Captain Bruner his outstanding record in peace and war, the vision beyond thought of self-safety which led him into the experimental night-flying work, when hazard accompanied even the most routine night take-offs and landings, and which work has resulted in the very efficient night flying equipment of the modern airplanes and airways.

Captain Bruner could leave no finer legacy to young Donald, Jr., who, with Mrs. Bruner, stood near to see his father honored, than the memory of those sunny silent minutes before the flag staff, the officers at salute, and the symbolic flying cross with all its implied bravery and gallantry, being pinned to his father's lapel by the United States Government's highest ranking military officer available. What a gift to any son!

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MARCH FIELD AND THE C.C.C.

Of the 88 Regular Army officers stationed at March Field, 29 are assigned to C.C.C. work camps and 22 are performing district staff functions in addition to their other duties. Lieut.-Col. H.H. Arnold, Commanding Officer of the March Field District, supervises 25 forestry camps.

The three tactical squadrons of the 17th Pursuit Group are consolidated into three flights in the 95th Pursuit Squadron, and the three tactical squadrons of the 7th Bombardment Group are consolidated into the 11th Bombardment Squadron for purposes of tactical squadron training.

The following letter was received from Major General Malin Craig, Commanding General of the 9th Corps Area, by the District Commander:

"The mission assigned by the President for the enrollment of the Civilian Conservation Corps having been successfully completed, I desire to extend to all ranks of the Ninth Corps Area and to the civilian employees thereof my thanks and appreciation for the efficient and devoted discharge of duty. ****"

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According to word received from the Rockwell Air Depot, March Field is to be equipped with a new allotment of 100 tactical planes during the Fiscal Year 1934, as follows: 54 P-26A, 1 P-30, 6 B-7, 10 B-10, 20 B-12, 2 O-19B, 2 BT-2, and one each of types F-1-A, C-4, C-14, C-24 and C-6.

NAVAL OFFICERS VISIT AVIATION REPAIR BASES

A recent issue of the News Letter of the Bureau of Aeronautics, Navy Department, tells of a tour recently made by two representatives from each of the Navy's continental aircraft repair bases, three representatives from the Bureau of Aeronautics and one from the Bureau of Supplies and Accounts, the object of which was to promote economy and progress in the overhaul and maintenance of naval aircraft. These Navy representatives made a comprehensive study of aircraft repair methods and costs at Air Corps repair depots and at the overhaul centers of the larger commercial air lines throughout the United States.

The Navy News Letter goes on to say: "The trip was interesting and profitable. The naval visitors found a real welcome at both Air Corps and commercial plants, and a complete readiness to discuss and to demonstrate all phases of maintenance and repair methods and costs. Services received by the visiting officers at all Army fields were worthy of special note. What did you see? What did you learn? What will the Navy profit? are questions most frequently met by the returned travelers. Time will be required to reach the ultimate answers; to prepare reports at the various naval repair bases and in the Bureau; to collect these reports, to consolidate and to assimilate them; and then to disseminate the information not only to the individuals who were able to participate in the recent travel, but to others now engaged in the administration and performance of naval aircraft overhaul, and to still others who will come after them. Already it is apparent that the point of view and the inherent interest of representatives from the scattered fronts of naval aviation led them to discover and to observe a variety of facts - not contradictory, but supplementary - that should produce a summary report of wide scope and definite importance. The continent of the United States is, today, a vast laboratory in which are being worked toward their conclusions experiments of great importance in the very rapidly changing art of flying.

Relatively few airplanes are being overhauled commercially. So great has been the recent increase in speed of transport air schedules that equipment still entirely serviceable, so far as its condition goes, is being replaced by the much faster and much finer fleet of aircraft now being produced in several aircraft factories throughout the country. The maintenance engineer has been given a large voice in the design of this new equipment, to the end that airplanes may spend a very small part of their lives in the maintenance hangar. Certain of the newer types of transport aircraft have so remarkably justified this stressing of the importance of maintenance that the men who service them predict a day when commercial airplanes will no longer require the traditional routine major overhaul during their busy lives. On some lines a certain group of planes is scheduled for almost continuous operation with the very minimum of time in maintenance hangars, in order to determine what is the maximum possible use of equipment, what are the features of design which delay the operation of aircraft, and how can design be improved to eliminate these delays and increase the pay capacity of the aircraft.

'Engines don't wear out,' is a common opinion. They become obsolete because of the development of new designs, or they are retired after some 4,000 hours of operation, while still apparently intact, because of uncertainty concerning metallic fatigue. On some transport lines the demand placed upon engines during their lives is being intensively increased in a deliberate attempt to wear them out and to discover the maximum service that can be derived from them. Cruising speeds of conventional engines are being stepped up to 2,000 r.p.m. and greater cruising speeds are yet to be tried. With each small increment in engine speed, the overhaul interval is reduced to about 350 hours, then increased toward 400 hours to discover the point at which parts begin to deteriorate rapidly under the increased demand placed upon them, so that they may be overhauled at the most economical interval both for the safety of operation and the economy of the overhaul. The life of individual parts is being carefully recorded and studied.

It is noteworthy everywhere that effective cost analysis and careful record keeping appear to have preceded each gain in performance and to have given great impetus to the improvements that are rapidly being made. A spirit of confidence in their ability to 'lick' any difficulty and the sense of a precise grasp of the complex problems incident to the high-pressure operation of aircraft were noteworthy wherever systematic analysis was a well-developed part of organization.

Engines completely installed in mounts, ready to be placed in an airplane is a matter of moments; rubber mountings for engines; quick detachable instruments; instrument boards, shock-mounted to absorb vibration; spark plugs that serve their purpose well over a thousand hours, function 350 hours without removal, and then are reconditioned for a few cents apiece; radio shielding of a great variety of designs, radio shielding of the simplest and cheapest appearing construction, said to permit voice communication across a span of more than a thousand miles; a cleaning vat whose invisible vapor melts away in a matter of seconds, the thickest coatings of grease and dirt from objects hung within it, as though black magic were the cleaning agent; a hundred gadgets, wrinkles, devices for the saving of time and the lightening of labor; overhaul shops operated like automotive assembly lines; the world's most modern, and perhaps its largest aircraft overhaul plant, superbly laid out for the smooth flow of a huge volume of work; these are but a few of the many features to be seen in this tour about the country. The experience was of the greatest conceivable value to each member of the visiting parties, who return with the feeling that it should be repeated periodically by Navy personnel, and that a visit to this vast laboratory should be an introduction to his new work for each officer about to assume duty in a Navy 'A&R' department.

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A WARNING TO AIRCRAFT MECHANICS

The Navy News Letter reports that a recent ground accident of an unusual nature had such serious possibilities that all hands had well take a lesson from it. A propeller had been removed for checking. At the close of working hours a mechanic simply hung the propeller on the shaft as a matter of simple storage. Next morning the plane was rolled out, along with others, in preparation for turning over the engine, the mechanic being absent from the squadron at the time. An effort was made to start the engine, with the result that the propeller immediately flew off forward, hitting the ground with such violence that undoubtedly it would have caused death or serious injury to any person it would have hit.

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Construction work completed in the month of June at Fort Sill, Okla., included a new concrete apron in front of the new hangar and gypsum ceiling for the west hangar. The new parachute and locker room was completed early in July.

NOTES ON THE CIVILIAN CONSERVATION CORPS CAMPS

On May 24th, the first contingent of Civilian Conservation Corps applicants, approximately 1200 in number, arrived at Langley Field, Va.

From the temporary "Bonus Camp" established at Fort Hunt, Va., the large group of veterans reached Langley Field by special train and boat, and were quartered in vacant hangars, warehouses and buildings, pending the completion of a cantonment, which was later established to the left of the flying field. With the necessary bathing and toilet facilities installed, the C.C.C.'s all moved from their various temporary housing headquarters to the field, where they were all intact and divided into companies, with Regular Army Air Corps officers designated as commanding officers of the various companies.

Two hundred men comprised each of the six companies, including one colored company, which had been self-sustaining since its arrival at the Virginia Air Corps station. Their headquarters was established west of the 19th Airship Company. The balloon hangar, formerly the property of Fort Eustis, Va., and recently transferred to Langley Field, served as their housing quarters.

The Post Commander appointed a staff of officers to work with the C.C.C. Capt. Henry Pascale was designated as Camp Commander; Lt. H.L. Neely, Adjutant, and Lt. F.A. Bacher, Supply Officer. Warrant Officers Gromme and Phelps served as assistants to the Camp Staff. Other officers were placed on duty with the C.C.C., as well as enlisted personnel, the latter acting as 1st Sergeants, Mess Sergeants, Supply Sergeants and Cooks.

On the day following their arrival, examinations were given in the Post Gymnasium, where temporary headquarters was established. The few veterans rejected for physical defects were furnished transportation to their homes, the remaining men continuing with the conditioning for future work in Uncle Sam's National Forests. Issuance of clothing was made by the Camp Supply Officer, consisting of various uniforms, raincoat, shirt, belt, underwear, barracks bag, service shoes, jumper, trousers, hat and socks.

Various athletic activities were participated in by the C.C.C. A mass meeting was held a few days after their arrival, when the companies appeared all intact for the first time under the respective commanding officers. Lt.-Col. A.L. Sneed, Post Executive, and Chaplain William K. Lloyd addressed the Corpsmen, and entertainment was furnished in the form of music and old time war songs.

At the time of this writing, official data regarding the departure of the former "Bonus Army" men had not been released. However, a call is expected almost any day to send the C.C.C. to the National Forests after over a month's conditioning at Langley Field.

The morale of the Vets is unusually high. Everyone has shown a willingness to work and aid in any way when called upon. The advantage of military training is very much in evidence as the buzz of activity compares with that of World War cantonment days.

Later arrivals at Langley Field have set the population of the former "Bonus Army" vets to approximately 1400.

On June 21st, Major-General Benjamin D. Foulois, Chief of the Air Corps, arrived by air at Chanute Field, Ill., where he remained for about three hours, conferring with Lieut.-Col. James A. Mars, Commanding Officer, regarding C.C.C. matters. General Foulois stated that the Commanding General of the Sixth Corps Area, Major-General Frank D. Parker, spoke highly concerning the hearty cooperation rendered by Col. Mars in furnishing Air Corps officers and noncommissioned officers for C.C.C. duty when the calls came. General Foulois was accompanied by Capt. A.B. McDaniel as aide, flying in a separate airplane, and departed on the same afternoon for Scott Field, Ill.

Lieut. Robert W. Harper, of Chanute Field, Ill., who has been in charge of the inspection of selectees for the Central Illinois District, No. 7, for the Civilian Conservation Corps, completed his work on June 5th, after having covered six Illinois counties and filling the quota of 440 selectees. The largest single contribution in this district was from Bloomington, Ill., which furnished 144 young men. Lieut. Harper has an extremely interesting account to render on this work, and reports that the men selected are very good material.

Of the first echelon of officers who were ordered from Chanute Field, Ill., to duty with the Civilian Conservation Corps, all have given a one hundred percent account of themselves. The officers reported to Fort Sheridan, Ill. Lieut. George R. Bienfang was, shortly after his arrival, appointed Camp Police Officer of the large camp at that station. Capt. Edwin F. Carey was placed in charge of a company, and within a short time was given first place for the finest appearing and most efficient unit, setting an example for all of the many others composed of the several thousand men. Captain Carey's company was shortly assigned to its permanent location at Starved Rock, Ill., considered one of the most beautiful spots in the Middle West. Next in line was Captain Russell M. Greenslade, whose company was given the next place following that of Captain Carey, and held as an example in appearance and efficiency for the others.

On July 1st, eleven more officers of Chanute Field departed on temporary duty with the C.C.C. at Camp Custer, Battle Creek, Mich. These officers included Capts. J.F. Powell, W.T. Meyer, Lieuts. R.C. Wriston, D.M. Ramsay, W.L. Ritchie, F.E. Cheatle, A.R. Springer, F.G. Allen, L.H. Tull, L.D. Fator and R.V. Williams. This brings the total of Chanute Field officers now on C.C.C. details to 20, of which number 19 are on detached service from the station. Chanute Field Air Corps officers on C.C.C. duty are thoroughly interested in their work and report that they have a fine class of men with which to work. They report that practically all of the C.C.C. personnel under their jurisdiction are eager in their work and appear to enjoy their new relations with the old Army life.

In the Rockwell Field District, classes were established for every night in the week for members of the C.C.C. wishing to improve on their education. The following subjects are proposed to be taught: Trigonometry, Mechanical Drawing, Public Speaking, Chemistry and Mental Hygiene.

The total strength of the C.C.C. has been announced at 301,575, distributed as follows:

240,000 young men, unmarried,
34,375 experienced foresters,
2,200 veterans recruited from Bonus Marchers,
25,000 veterans.

The 9th Corps Area, which is comprised of the eight Western States, has numerous and large national forests. Consequently, 459 camps have been spotted in the Area, while the other eight Areas altogether have a total of 971 camps.

FUEL TESTING BY THE U. S. ARMY AIR CORPS

By S. D. Heron, Materiel Division

I. Preliminary Investigation.

Investigation of the precise measurement of the anti-knock values of aircraft engine fuels was started in 1928 by the Air Corps. It was soon found that the relative anti-knock values of fuels varied widely with test engine conditions and that the anti-knock value of benzol mixtures in terms of either gasoline-tetraethyl lead blends or heptane octane mixtures dropped sharply as the cylinder temperature was increased. The effect of engine temperature upon aromatics had not hitherto been known to the Air Corps and at once showed the necessity for knock test engine conditions which gave a similar relation to diverse types of fuel as did the average multi-cylinder engine. The apparent effect of engine temperature upon gasoline-aromatic blends was later found to be due to both cylinder temperature and throttling as a constant compression ratio was used and the throttle progressively closed as the cylinder temperature was increased.

Cross checking of multi-cylinder engines with knock-test-enginesindicated during the initial portion of the investigation that the Series 30 engine when operated at 900 R.P.M. and 350° F. jacket temperature, gave fairly close agreement with multi-cylinder engine as regards gasoline-tetraethyl lead blends, gasoline-aromatic blends and gasoline-aromatic-tetraethyl lead blends, all of high anti-knock value (about 87 octane number). At the same time it was found that agreement with multi-cylinder engines could not be obtained on high octane number blends with the Series 30 engine if the rate of revolution was less than 900 R.P.M. or the jacket temperature was below 350° F. The significance of throttling, knock intensity, spark advance, etc., was not known at this time.

It was found that cylinder temperature and degree of knock were closely related and that it was easier to make the knock-test-engine results agree with those of the multi-cylinder engines as regards fuels containing any considerable concentration of aromatics if the rating was made on a basis of cylinder heating tendency rather than upon a basis of audible knock. The result of this finding was the development of a temperature plug for rating fuels in knock-test-engines.

II. Series 30 Engine Specifications.

The first fuel of standardized anti-knock value was put into general service use at the beginning of 1931 and procured to U.S. Army Specification No. Y-3557-A. (See Table I). The test method was known to be unsound, but was based upon the availability of knock test equipment and its ease of operation and it did not appear that benzol blends or cracked fuels were likely to be supplied and thus render the method faulty in practice.

U.S. Army Specification No. Y-3557-A went through various minor modifications without change of rate of engine revolution or cylinder temperature until the supply of large quantities of cracked gasoline in the latter part of 1931 and a tendency of suppliers to concentrate upon cracked fuel made a change necessary. U.S. Army Specification No. Y-3557-E was, therefore, issued. This resulted in cracked-leaded fuels and benzol blends being much more fairly rated in terms of straight run gasoline-lead blends. The test method proved to be exceedingly difficult to reproduce in terms of heptane-octane ratings of gasoline-lead blends and generally troublesome on account of the very high cylinder temperature, the variable throttle opening and the inadequate control of knock intensity. The method was, therefore, modified to U.S.Army Specification No. Y-3557-F (See Table I) which gave much better reproducibility in terms of gasoline-lead blends which were the only fuels supplied to the specification. The method was found to be somewhat too severe upon cracked fuels for the later service engines. Further, it was found that not only was the method too severe upon cracked fuels of about 87 octane number, but that as the octane number of the fuel fell, the method became increasingly severe and at about 80 octane number and less under-rated aromatic-gasoline blends.

III. Work with C.F.R. Engine.

Work aiming at substituting the C.F.R. engine for the Series 30 engine was started early in 1932. By this time a considerable amount of data on the multi-cylinder correlation of gasoline-lead, gasoline-aromatic, gasoline-aromatic-lead blends and of alcohol versus alcohol-water blends versus gasoline-aromatic-lead blends had been obtained. The gasoline used in the lead blends were of the types which

(a) Had anti-knock values which sensibly did not vary in terms of octane number with severity of test conditions.

(b) Had sharply falling octane number with increased severity of test condition.

(c) Had rising octane number as severity of test condition was increased.

The blends on which multi-cylinder correlation data was available varied from 50 octane number to over 100 octane number. The work with the C.F.R. engine soon showed that without the mixture heater, the following were necessary for obtaining anything like adequate depreciation of cracked fuels and aromatic blends.

(1) 900 or 1200 R.P.M. was required.

(2) Throttling to about 50% of full throttle air consumption was required even in conjunction with cooling liquid temperatures of 350-400° F. and cooling liquids producing poor cylinder cooling.

As regards depreciating cracked fuels, the engine was decidedly insensitive to cylinder temperature. No suitable method fitting the available data on all fuels was found.

Work was also carried out using the mixture heater after the Motor Method had been worked out. This work was done at 1200 RPM with mixture temperatures of 300° F. and also without mixture heat but with and without the heater unit in position at jacket temperatures of 212 and 300° F. No satisfactory method could be found with any of the above conditions which would fit the available multi-cylinder data.

Before the Motor Method was evolved, the Air Corps had procured 2-5/8" bore cylinders for the C.F.R. engine which were a very close copy of the Series 30B cylinder as regards colling characteristics. This was done as the Series 30 cylinder appeared to be a reasonably satisfactory design for depreciating fuels as did the multi-engines. As preliminary work with the 2-5/8" bore cylinder indicated that it could be made to approximately agree with all the multi-engine data, and pressure of other work limited the time which could be further spent on trying to evolve a satisfactory specification with the standard 3½" bore cylinder, it was decided to produce a temporary specification in terms of the 2-5/8" bore cylinder pending the production of a satisfactory method with the standard cylinder by other agencies.

Investigation with the 2-5/8" bore cylinder covered the effects of

900 and 1200 R.P.M.,
throttling,
spark advance,
jacket temperatures from 212-375° F.,

zero to 300° F. mixture heating,
knock intensity and its control.

It was found that mixture heating to 200-300° F. was not a substitute for a high cylinder temperature, particularly with reference to the observed full scale single cylinder engine relation between straight benzol and leaded straight run gasolines. Mixture heating also destroyed the observed full scale effectiveness of fuels of high latent heat of evaporation. The conditions finally found to most closely fit all the multi-cylinder engine data were as follows:

1200 R.P.M.
330° F. jacket temperature (diethylene glycol).
Fixed spark advance of 30°.
Standardized spark plug.
Throttle opening constant at 90°.
Carburetor bolted direct to cylinder intake port face without a gasket.
Improved temperature plug (Air Corps Type 15)

Under these fixed conditions the compression ratio is varied until the temperature plug reads the same for C.P. Benzene as for 88 Octane, 12 Heptane. With any fuel being tested, the engine is adjusted so that the above standard temperature reading is obtained (except for fuels which after fire on cutting the ignition switch) and the matching mixture of reference fuels then determined. This is covered in detail by Air Corps Specification No. 3566.

While the Air Corps failed to obtain suitable conditions with the standard C.F.R. cylinder which would correlate with the available multi-cylinder data, it does not consider that such conditions cannot be found, but rather that it merely failed to find the necessary conditions.

IV. GENERAL TEST CONDITIONS.

In all the test methods used by the Air Corps the mixture ratio has been that giving either maximum bouncing pin or temperature plug reading.

In all but the earliest work with the Ser Series 30 engine, the carburetor air was dried with calcium chloride down to an absolute humidity of 4 to 7 mm.Hg water vapor pressure. At the present time the laboratory is being provided with conditioned air of 70-74° F. and 50% relative humidity so that the use of air dryers will no longer be necessary. The Air Corps has found that humidity control is necessary for reproducibility of ratings when high cylinder temperatures are used in the fuel-test-engines.

TABLE I.

Specification No.	Engine	RPM	Cooling liquid temp. °F.	Spark advance degrees	Detonation determined by	Throttle opening degrees	Full throttle compression pressure lb./sq.in. or compression ratio	Anti-knock value or reference fuel.
U.S.A. Y-3557-A	S.30	600	300	20	Bouncing pin	variable	C.R. 7.25 to 7.75 to 1	87 Octane No.
U.S.A. Y-3557-D	S.30	600	300	14 to 16	Bouncing pin or Type 3 temperature plug	"	200-210 lb.	" " "
U.S.A. Y-3557-E	S.30	900	375	15	Type 3 temperature plug	"	200-220 lb.	" " "
U.S.A. Y-3557-F	S.30	900	375	15	"	"	" " "	C6 1.1 ml. $PbEt_4$ per U.S. gallon
A.C. 3566	2-5/8" Bore C.F.R.	1200	330	30	Type 15 temperature plug	Fixed 90°	Variable	C6 2.0 ml. $PbEt_4$ for U.S.A. Y-3557-H Fighting Grade 65% A2 35% C6 for U.S.A. Y-3559-? Domestic Grade

19TH AIRSHIP COMPANY ACTIVITIES

Concentration on coastal patrol missions played a prominent part in the training of the 19th Airship Company at Langley Field, Va., the TC-13, largest non-rigid type airship in this country, successfully completing a 45-1/3-hour mission on July 19th.

On this flight, the TC-13 took off with approximately 650 gallons of gas, proceeded up and down the Atlantic seacoast and north and south of the Chesapeake Bay, distances of 150 to 200 miles. The cruising range was limited somewhat due to the radio equipment at present installed in the large airship. A low ceiling was encountered on a portion of the trip, necessitating instrument flying during this short period.

A total of 2400 aircraft hours was allotted the TC-13 during the current fiscal year. This time will be utilized in making patrols out to sea and along the coast. It is contemplated that most of these patrols will be from 45 to 60 hours' duration.

Lighter-than-Air pilots now at Langley Field include: Major Butler, Lieuts. Williams, Anderson, Shively, Ent and Paul. Captain L.A. Lawson, Commanding Officer of the 19th Airship Company, and Lieut. R.R. Gillespie, are on duty with the Civilian Conservation Corps.

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Construction work completed in June at Fort Sill, Okla., included a new concrete apron in front of the new hangar and gypsum ceiling for the west hangar. The new parachute and locker room was completed in July.

MATERIEL DIVISION POWER PLANT LABORATORIES

By the Wright Field Correspondent

The Power Plant Laboratories at Wright Field are among the most efficient and completely equipped for the testing of aircraft engines in existence. These laboratories are housed in three main buildings. The largest of the three, known variously as the "Power Plant Administrative Building," "Dynamometer Laboratory," and the "Laboratory Building" contains the offices of the executive and engineering personnel of the Power Plant Branch, a drafting room, an engine overhaul shop, and the dynamometer laboratory. Of these the Dynamometer Laboratory is of special interest, the others being more or less self-explanatory.

This laboratory contains three stands for testing air-cooled or liquid-cooled engines developing horsepower up to 1500; three stands for testing large liquid-cooled engines (two of which have maximum absorptions of 1500 h.p. and the third of 1000 h.p.); one stand for testing smaller air-cooled engines of 300 h.p. or less; four stands for testing small single-cylinder engines of either the air-cooled or liquid-cooled type. Exhaust collecting tunnels run the entire length of the laboratory on both sides with fans at one end which discharge into chimneys at the rear of the building, adequately removing the exhaust from all engines. There is also a "cold room" in which liquid or air-cooled engines may be tested for starting and operation characteristics under conditions approximating those of extremely cold weather or high altitude; and here the effects of cold and altitude on fuels, lubricants, oil coolers, fuel systems, and all materials and parts used in the operation of an engine may be studied.

By means of a large carbon-dioxide refrigerating system, the air in the cold room can be chilled to desired temperatures to a minimum of 50 degrees below zero, Fahrenheit. The "cold room" is insulated with cork, 8 inches thick, and is cooled by the circulation of air over 7580 feet of dry expansion coils. The working space is ample, being 15 feet by 27½ feet. The operation of the engine mounted on the test stand may be controlled either from within or without the room. A telephone and signal system are provided in order that engineers working in the cold room may have outside communication if desired. Provision for the wearing of electrically heated clothing is also made. In case inflammable vapor or carbon dioxide should seep into the air of the cold room, detectors would not only indicate the fact but cause the ringing of alarm bells.

While the cold room is especially adapted for testing engines for starting and operating at ground, the question of reduction of pressure as well as temperature enters into ground tests for altitude conditions, and to meet this problem five of the test stands in the dynamometer building have been equipped for "simulated" altitude testing. In this testing both pressure and temperature are reduced at the entrance of the carburetor, and pressure at the exhaust ports. Temperature reduction of the carburetor air is accomplished by the carbon dioxide refrigerating system.

Two 600 h.p. electric motors which drive propeller type blowers supply cooling air for the larger air-cooled engines at 166 m.p.h., and two smaller motors (100 h.p. and 200 h.p.) for small single and multi-cylinder engines. Reduction in pressure is accomplished at the exhaust ports by four large vacuum pumps which draw the exhaust gases away. Regulation of pressure at the carburetor entrance is accomplished by throttling. By this method engines can be tested at any altitude up to 30,000 feet. This laboratory forms one of the most extensive test plants in the United States for engine testing under simulated altitude conditions.

The Dynamometer Laboratory is fitted with the latest high-speed types of dynamometers, water brakes, gauges for determining fuel consumption, scales for determining engine torque, revolution counters, tachometers for controlling and computing engine speed and complete equipment for the performance testing of the aircraft engine and each of its units.

Just outside the Laboratory Building a water storage basin is located for supplying soft water by circulating pumps to water-cooled engines, water brakes, oil coolers, and other equipment. This is necessitated by the hardness of the water ordinarily supplied in the vicinity of Wright Field, which has a heavy lime content and is injurious to test equipment. Rain water from the roofs keeps the basin, which has a capacity of 235,000 gallons, adequately full except in the dry seasons of the year, when water softeners are resorted to.

TORQUE STANDS

In appearance the torque stands resemble a series of square concrete stacks, 40 feet high, joined by enclosed passages. The materials employed are reinforced concrete and steel. Centered between the stacks are seven torque stands, six for the endurance testing of engines, and one for the testing od propellers as installed on engines. Each engine support pier is a huge block of concrete sunk 20 feet into the ground and completely encased in cork to prevent vibration.

Each torque stand has its own engine room which has a clearance for swinging a propeller 18 feet in diameter. The great stacks are for the purpose of reducing noise outside the building and are so constructed about the engine rooms that the sound waves striking the 40-foot walls can find an outlet only through the top of the stack which is open to the sky. Between each two engine rooms is an operator's room for observing engine tests, with glass observation windows on each side, looking into the engine rooms. Instruments for measuring engine pressure, temperatures, fuel flow, fuel consumption, engine speeds, etc., are placed on the wall near each observer's window.

Small rooms within the operating rooms contain tanks for engine fuel and oil used in running tests. These tanks are filled as needed for the special test being run by pumps from larger tanks located without the building.

FUEL TEST LABORATORY AND DYNAMOMETER STORAGE

A laboratory for the testing of fuels and lubricants contains six single-cylinder engines especially designed and constructed for this work. Characteristics of various oils and the anti-knock properties of fuels are determined here. Research necessary for the preparation of fuel and oil specifications for the Air Corps is also conducted here. As a result of the tests performed in this laboratory, the fuels and lubricants used by the Air Corps are of higher quality than any ever before obtainable and are probably not surpassed by those in use by any other military organization.

Adjoining the Fuel Test Laboratory is a large storage room where the thousands of items used in connection with power plant operation and testing are available when required. This is in no sense a store room for worn out or obsolete experimental equipment, but for that which, while not in constant use, is of sufficient importance when needed to earn a place there.

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Shortly before the close of the Fiscal Year, a 3,000-mile flight was made by the 430th Pursuit Squadron (Res.) Kansas City.

PLANES DROP FOOD TO EXPLORING PARTY

NICHOLS Field, cooperating with the Philippine Government in furthering a recent exploring expedition, has introduced several new methods of exploration. First, a careful preliminary reconnaissance was made from the air of the entire territory to be covered, the plane following the route to be taken. Second, a photographer in the rear cockpit of the plane took a series of vertical pictures of two rivers to be explored. These photographs, pasted together into strips, formed maps which the explorers actually used in going up the rivers. Third, another plane accompanying the first, took a series of oblique photographs of the mountains, which were later plotted on a map and proved of the greatest value in mapping the mountain range. And last, but certainly not least, the explorers were sustained by food dropped to them in two cargo parachutes from airplanes after they had been out eleven days from their base.

First Lieutenant John L. Hitchings, Air Corps, who headed the expedition, said:

"Our expedition, which consisted of Mr. A.W. Exline; Major G.D. Davidson, C.A., Retired, and myself, was organized for the dual purpose of improving existing maps and studying the wild tribes in the interior of Mindoro. That we were success was due to the whole-hearted way in which all our friends helped us.

"By permission of Major John B. Brooks, my Commanding Officer, Army planes were used to help us. Lt. Howard Engler piloted us on our preliminary survey, took us to our starting point and, together with Capt. E.P. Gaines, Lts. R. Reeve and G. Hoyle, dropped food to us; and this help was indispensable. The first rate aerial pictures taken for us by Staff Sgt. R.M. Bishop, Privates R. Brewster and L. Strubel of the Sixth Photo Section, proved invaluable guides to an unmapped region.

"Landing on the Cantura field east of San Jose Major Davidson and I found Exline awaiting us with eight husky Visayan cargadores. Circling Obelisk Peak, we doubled back on the Lumintao a short way, then went to Tambonac to run down a 'Lost White Tribe' story. We found no lost white tribe, but an interesting lot of Bokits, with whom we lunched on nami. Major Davidson, who was the anthropologist and the linguist of our party, measured their height, reach and cephalic indices, and investigated their customs, while I took moving pictures of them. Meanwhile, Exline, lingering in the Cantura foothills, had run across a python and photographed him, and located a salt spring, which we plotted on the map. We also plotted a petroleum seepage I had encountered on a previous trip there.

"Returning to our camp at Cantura, we prepared for our trip north-east, over the mountains. Exline shot a five point buck, and the meat was more than welcome. At this point we parted with regret from Exline, who was forced to return to the Sugar Central, and the Major and I shoved on through the tigbau with five Visayans and the prospect of several Mangyans to carry for us. Our food supply was already something of a problem, but having secured permission from Governor General Roosevelt to kill any game we needed for food, I knocked over a fine bull tamarao the first day out. The meat lasted us a week, reappearing at every meal in the form of jerky.

"We followed the Batangan River to a tributary the natives call the Cayagayan, and having a photographic strip map of it, followed it to the pass, which an uncorrected altimeter reading told us was 894 meters high. Many foresters had believed that the lowland agohos changed to pines throughout the Mindoro mountains; but we did not find a single pine on the entire trip, and we noted agohos extending to the top of the pass. Our camps were in somewhat rugged locations; one of them, in fact, was on a steep bank up which we had to pull ourselves on a rope to get to our hammocks.

"Dropping down into the Bongabong Valley, we sighted caingins, which marked the small Batangan village of Acliang; and making for them we purchased large quantities of gabi and saguing. Our coppers were considered very valuable, but the old chief was entirely ignorant of the value of silver and would not accept it in payment. The chief was quite an interesting chap and played us a lively tune on a sort of home-made guitar strung with woman's hair. All the natives we encountered value strips of red cloth suitable for turbans or goe-strings more highly than any amount of money. Beads got over pretty well, and small mirrors produced minor riots, but red cloth took the place of the gold standard.

"Thence we proceeded to the main bend of the Bongabong, where the food was to be dropped in three days. No friendly caingins greeted us, and the food situation got more and more serious. Our cargadores, when put on short rations, showed marked signs of disaffection, and expressed grave doubts that any big birds would come over and drop us food. Seizing this opportunity to get rid of the weaklings, we offered to pay off any who wished and let them go with enough rice to get them back. All took us up except three Visayan lads who said they would go through with us, food or no food. To these three brave young men, Mariano Rendon, Proctoso Lescara, and Carlos Encomio, we entrusted our lives time and again on the difficult part of the trip and they never failed us.

"The morning of the eleventh day from the Cantura base, the planes found us and dropped us food. I took pictures of the parachutes coming down, but I'm afraid my hand trembled with emotion! We devoted the rest of the day to eating.

"Going up the Bongabong, we found that it turned West, but that an unexplored tributary ran northwest toward the central north-south divide of the Island. Fortunately, our three Visayans had gotten us in touch with some Batangans, of whom the chief had never seen a white man, and had persuaded them to become our cargadores. With the aid of these people and a strip map we forged up the river. I can not say it was altogether easy going. We ran into a canyon where we had to use ropes to get over a series of rapids; the going improved but further up the river it again got pretty bad. Leaving behind all but Carlos and and two Batangans, the Major and I pushed up to the upper gorge. There, leaving all but one Batangan to make another camp, we stripped off our clothes and alternately swam through deep, swift, ice-cold pools in a gorge that nearly closed over our heads, and climbed up over small waterfalls. The Batangan fell out, saying that he could no longer swim against the current; but we went until we satisfied ourselves that we had reached the headwaters of the river. Then we turned back, picked up the Batangan and Carlos, and returned to our camp down the river. There we took a gulp of brandy to take off the chill, ate soup and rice, and went at once to sleep. I slept fifteen hours out of the next twenty-four. The river has water as pure and cold as crystal, and rocks of many fascinating colors. It is indescribably beautiful.

"Guided by our Batangans, we started eastward again over an unmapped mountain range for Pinamulayan. We started by climbing a mountain with an uncorrected altimeter reading of 1405 meters, and again the going was not easy. I had started with two new pairs of shoes. My basketball shoes were gone, although I had prolonged their use with in-

ner soles cut from bark; and my Army shoes were fast going. But that day and the next put us down into the Eastern foothills. Our Batangan cargadores here secured others to replace them; and having measured them, photographed them, and paid them off with the cloth and beads they desired, we bade them goodbye.

"We came out at Bonsod, camped in a beautiful cocoanut grove, sent our Visayans home by boat, and went on up the coast with the aid of two horses which, however, carried packs and not us. The last five miles were comparatively civilized; we rode in state in a carromate. A more ragged pair of tramps can scarcely be imagined than we were when we pulled into Pinamalayan. I was practically barefoot, having worn out two pairs of shoes; and I had also worn out both my breeches and my shorts. And Major Davidson had the noblest crop of whiskers I have yet seen.

"We got clothes in Pinamalayan and returned on the S.S. TAMARAW, bringing with us, among other souvenirs, a bamboo bow used for shooting fish, pigs, and monkeys, and a quiver of reed arrows tipped not with metal, but with poisoned slivers of wood. I was more than fortunate in having such capable and jovial companions as Exline and Major Davidson on the trip; for that reason and because of the stirring beauty of the country, I shall always remember the expedition with a glow of pleasure.

"We all wish to express our gratitude to the Philippine Government for the backing they gave us; to the Nichols Field personnel I have mentioned; to Captain Russell Maughan, who helped us to organize the trip, and to Professor Otley Beyer, who lent us valuable documents and helped us in many ways. I hope the data we brought back will repay Professor Beyer.

"The Bureau of Science very kindly analyzed several rock specimens we brought back; they found indications of gold on a rock from the Bonbabong River, but not such good indications as recent specimens from near Mindoro's northern coast.

"Mindoro is not the white man's graveyard it is commonly pictured; but our trip was possible only in the dry season; and I do not advise anyone even then to enter the Eastern Mindoro mountains without full protection against rain and malaria."

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CLARK FIELD A DESIRABLE STATION

Clark Field, the home of the 3rd Pursuit Squadron, according to the officers and men stationed there, is the one place in the Philippine Islands to be stationed. "At any rate," says the News Letter Correspondent, "we have a high percentage of extensions of tour and of reenlistments.

"Clark Field, as we have said, is a one squadron post. The squadron is part of the Fourth Composite Group, with headquarters at Nichols Field. The field is adjacent to Fort Stotsenburg in Pampanga Province. Fort Stotsenburg, the third largest post in the Islands, is located some sixty miles by air, northwest of Manila. Spread out on the slope below Mt. Pinatuba and overlooking the central plain of Luzon, with Mt. Arayat sticking up its odd, solitary way in the middle, Clark Field affords a sense of space that we miss in the crowded jumble of Manila.

"Being an extremely large military reservation, it is possible to control sanitation so that the water is clean and the mosquitoes rare.

"The Air Corps troops are the only American soldiers on the post, the 26th Cavalry and 24th Field Artillery being Scout Regiments. There are twelve very comfortable sets of quarters on the field, but four or five officers are always quartered up on the main post. There are two swimming pools, tennis courts and an excellent golf course. Taken altogether, most of those now stationed here think it a pretty good place to be."

At present the officers stationed at Clark Field are: Major G.N.Brower, Captains Leland R. Hewitt, Harold Rivers, 1st Lieuts. Lee Q. Wasser, Yantis H.Taylor, George E. Henry, 2d Lieuts. Lawrence H.Douthit, Ford L. Fair, Thomas W. Steed, John W. Persons, Thomas J. DuBose, James A. Ronin, Austin A. Straubel, James S. Sutton.

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ENGINE MECHANICS GRADUATE AT LUKE FIELD

Luke Field, Hawaii, graduated a class of 92 enlisted men, now qualified engine mechanics, from the post school recently. This is one of the largest classes to be graduated from the Luke Field Post Schools, the courses of which include Airplane Engines, Armament, Carburetion, Ignition, Stenography and primary education. A large amount of credit is due Sergeant L.D. Miller, who is Chief Clerk for the Post Schools. Technical Sergeant Randles was instructor for the Engine class, and he has turned out many excellent engine mechanics under his expert supervision.

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OFFICERS GRADUATE FROM TECHNICAL SCHOOL

Graduation of the several 1933 officers' classes of the Air Corps Technical School was held on June 30th, diplomas being presented to the graduates by Lieut.-Col. James A. Mars, Commanding Officer of Chanute Field and Commandant of the Air Corps Technical School, at a military review held upon the occasion of the graduation ceremony.

The graduating classes included the Regular Army Officers' classes in Communications and in Maintenance Engineering, and the National Guard-Air Reserve Officers' classes in Communications, Maintenance Engineering and Armament, as follows:

Communications, Regular Army: Lieuts. W.L. Ritchie, M.E. Tillery, E.J. Rogers, T.H. Baxter, J.T. Sprague, G.W. McGregor, W.E. Blaufuss, H.G. Montgomery, Jr., L.H. Watnee; and Lieuts. Ricardo Casteneda and Javier Gonzalez of the Mexican Army.

Maintenance Engineering, Regular Army: Lts. C.D. Wheeler, O.F. Carlson, R. Kyle, Jr., A.J.K. Malone, F.C. Wolfe, S.E. Anderson, J.A. Bulger, E.A. Simmyer, Jr., C. Summers, T.M. Bolen, D.T. Mitchell and D.F. Meyer.

Communications, Nat'l Guard-Air Reserve: Lieuts. C.W. Alverson and T.E. Baker.

Maintenance Engineering, National Guard-Air Reserve: Capts. H.W. Generous, J.K.Gill, Lieuts. M.G. Carpenter, R.D. Castle, C.Stiles, R.S. Johnson and P. Waterman.

Armament, National Guard-Air Reserve: Dts. C. Gaty and E. Malstrom.

In addition, the following Reserve Officers on inactive duty attended the Maintenance Engineering Course and were graduated: Captain M.J. Jakowsky, Lieuts. C.K. Dunbar and P.S. Frederickson.

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The 1933 Officers' Class in Maintenance Engineering, under direction of Capt. William A. Hayward of the Air Corps Technical School, Chanute Field, spent several days before their graduation at Wright Field, Dayton, Ohio, where, under the cooperation of the Chief of the Materiel Division, they observed the latest engineering developments and methods of the Division. This period of inspection visit at Wright Field is considered by the school staff as resulting in the student officers gaining information that will be invaluable to them and their future organizations.

V-6481, A.C.

HENSLEY FIELD IMPROVED

Working under almost the same orders and regulations of Air Corps posts a hundred times its size, Hensley Field, manned by 15 enlisted men D.S., Air Corps Detachment, 8th Corps Area, and one Air Corps officer, commanding, starts its daily routine early and continues throughout the day and quite often work into the night.

Growing from 311 acres of mesquite-covered Texas soil with one lone building, now used as the Officers' Club, Hensley Field at the present time boasts of one of the most modern and up-to-date airways landing fields and facilities in the entire Southwest.

On May 15th last, two sets of officers' quarters and one set of noncommissioned officers' quarters were completed, bringing the total post buildings to ten. The officers' quarters are modern in design and are well located on th the reservation, overlooking two beautiful lakes, which are being landscaped and stocked with game fish. The quarters for the noncommissioned officers are in keeping with the two larger buildings, being constructed of hollow tile with stucco finish.

The enlisted men's barracks, a one-story building, built of brick and stuccoed to conform with the other post buildings, will house some 35 men. In the barracks is a most home like and modern Army day room, equipped with a radio, easy chairs, ceiling fan, and the best in reading material.

A final check shows that 1,476 visiting airplanes of the Army, Navy, Marine Corps and National Guard landed and received service at Hensley Field since January 1, 1933. During the recent West Coast Maneuvers, one day's traffic totalled 114 planes, 76 of which remained overnight. Receiving air traffic from four directions, a total of 3,540 officers and enlisted men passed through this station in the past six months. A large percent of this total, both officers and men, were quartered overnight at Hensley Field.

The mechanics and clerical personnel of Hensley Field are of the highest type of Army personnel and most skillful in their work. Each enlisted man has several distinct duties to perform and an excellent working knowledge of the Air Corps as a whole.

In the twelve months of the past fiscal year, 106 Air Reserve officers flew on active and inactive duty at this station, flying all approved missions successfully for 1,227 hours without a single forced landing or motor failure.

Eleven training and service type airplanes are assigned for active and inactive duty training. No scheduled yearly training program is carried out, but the daily flying at Hensley Field is a picture-story within itself of an orderly Army flying field. Quite often visiting ships arrive with motor trouble and receive the same thorough and efficient service as can be had at the larger and most modernly equipped groups.

At this time economic measures seem to have removed all possibility of the regular annual summer training camp which has heretofore been conducted. In the past summer, four camps of two weeks each, were held, an average of 130 Air Reserve officers being trained in a most thorough and efficient manner.

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NIGHT FLYING AT CRISSY FIELD

A new night flying signal system is being completed and will be in commission for the start of night flying training at Crissy Field, Calif. Four strings of lights have been lined between two buildings so as to be clearly visible from the air. It is expected that alternate strings of red and white lights will be utilized with a selective control switch in the Operations Office from which landing zones can be controlled.

RESCUE MISSION BY NATIONAL GUARD AIRMEN

Prompt action of New York National Guard airmen proved instrumental in effecting the rescue of six persons forced to jump overboard from a yacht which caught fire due to the overturning of a kerosene cooking stove. The imperiled party consisted of Colonel M. R. Guggenheim, his wife, son and three guests. Efforts to subdue the flames with fire extinguishers proved futile, due to the fumes from the flames combined with the chemical. It was impossible to reach the cabin where the life preservers were stored, as the flames barred any progress in that direction. There was one decorative life preserver lashed to the rail of the yacht and a bumper, a buoyant cylinder of canvas-covered reed and cork. Equipped with these, the six went over the bow of the burning yacht. There were no good swimmers in the party, and Colonel Guggenheim was the poorest of all. He clung to the life preserver while the others took turns hanging to the bumper.

They had been in the water several minutes when they saw a plane swooping toward them. One of the men aboard the plane, Capt. Rector, leaned out and dropped a life preserver among the little group struggling in the water. Capt. Rector and Lieut. Youmans had seen the burning yacht while they were directing artillery range finding at Fort Wright on Fishers Island. Several miles away in Block Island Sound, an Army tug was towing a target for gun practice. Capt. Rector at once radioed the tug and, cutting loose from the target, the Army boat came to the rescue, picked up all six, after they had been in the water more than 30 minutes, and took them to Fort Wright, where they were treated for exposure at the post hospital.

In this connection, the following letter from Col. Bryer H. Pendry, 245th Coast Artillery, to the Commanding General, New York National Guard, Camp Smith, N.Y., July 14, 1933, is quoted:

"1. Report is hereby made that the mission of the 27th Division Aero Squadron was handled by the officers detailed in a most commendable and excellent manner. The officers were available at all times, and information came from the air promptly and accurately.

2. It has also been reported by Lieut. Jos. J. Fallon, Hq. 1st Bn., who was an eye witness to the burning of Colonel Guggenheim's yacht, that had it not been for the promptness of these two officers in getting a life preserver to Colonel Guggenheim, in the fact of considerable danger to themselves and to their ship, there is no question but that the Colonel would have drowned before his rescue could have been effected.

3. It is suggested that the Commanding Officer, 27th Division Aero Squadron, be advised of the care and precision used by Captain Rector and Lieutenant Youmans in executing their mission with this regiment, and also their courage and promptness in aiding the rescue of Colonel Guggenheim and his party."

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11TH SQUADRON HONORED

The official presentation of the Mackay Trophy to the 11th Bombardment Squadron was made at March Field, Riverside, Calif., on the morning of June 17th. Lieut.-Colonel H. H. Arnold, Commanding Officer of the field, presented the award in a brief address.

A few days later, another tribute was paid the 11th Squadron when Mr. George McManus, famous cartoonist and creator of the Jiggs insignia which adorns the Curtiss "Condor" Bombers of the Squadron, participated in an impressive ceremony, in the course of which he officially signed over to the Squadron the

Jiggs insignia which was born in the mud of France during the World War.

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27TH SQUADRON VISITS CHICAGO

As part of the program of the opening of the American Air Races in Chicago on July 1st, the 27th Pursuit Squadron, Selfridge Field, staged an exhibition flight over the Chicago Municipal Airport, the scene of the Races.

The Squadron flew on the morning of July 1st to Curtiss-Reynolds Airport, which was employed as a base, and then in the afternoon performed its intricate maneuvers for the enjoyment and education of the crowds who attended the opening ceremonies of the Air Races. Lieut. A.A. Kessler, Commanding Officer of the 27th, led the Squadron first through several close drill maneuvers, including the "A C" formation which is becoming so familiar to civilians who have watched Selfridge Squadrons perform their drills. After the drill maneuvers, some mock single plane attacks on a ground target were made, and several other tactical formations.

In the evening after the flight, the entire Squadron was entertained on the yacht of Mr. McDonald, of Chicago. The Squadron returned to Selfridge Field the following day.

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GRADUATIONS FROM TECHNICAL SCHOOL

On May 26th, the 1933 National Guard and Reserve Officers Photographic class completed instruction, and its members were graduated from the Air Corps Technical School, Chanute Field, Ill. The class of eight members consisted of Captains Gerald V. Kelly, Vincent B. Moore, 1st Lieut. Reed E. Davis, 2nd Lieuts. John N. Mulvey, John E. Sandow, Air Reserve; 1st Lieuts. Joe O. Edge, Texas National Guard; Frank A. Low, Minnesota National Guard, and 2nd Lieut. Paul N. Flanary, Tennessee National Guard. These officers had been under instruction at the Air Corps Technical School for a period of three months, and their academic work was considered particularly gratifying.

Diplomas were presented by the Acting Commandant, Captain Samuel C. Skemp, at a ground review of the troops at Chanute Field held upon the occasion of the graduation.

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FOREIGN OFFICERS VISIT MARCH FIELD

A few days following the close of the Los Angeles Air Races, Major Ernst Udet, German war ace, who thrilled the crowds at the National Meet with his daring and skillful flying, paid March Field an official call, in response to the invitation of its Commanding Officer, Maj. Udet was taken on a tour of inspection of the field.

Group Captain G.R. MacFarlan Reid, Air Attache of the British Embassy in Washington, visited March Field on June 28th.

On July 1st, Captain Jean Vautrin, General Staff officer of the French Army, visited March Field.

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FLYERS WHO MAKE THE GRADE

Queries are often received as to what percentage of students entering flying school possess the inherent ability to fly and succeed in passing the necessary requirements for the rating of a military pilot.

The little monthly class paper issued by the Flying Cadets at the Air Corps Training Center publishes some very interesting statistics on this subject. These statistics deal only with students entering the Primary Flying School at Randolph Field, Texas, and graduating therefrom to the Advanced Flying School at Kelly Field, Texas. Generally speaking, after a student is transferred to the Advanced Flying School he may be counted on successfully completing the advanced course. The exceptions to this rule are comparatively few.

Taking the class, including officers, flying cadets, noncommissioned officers training in grade, and students from foreign countries which began training at Randolph Field in November, 1931, the figures show that 48.80% of those who started training were transferred to the Advanced Stage. The percentage of successful students for the class of March, 1932, was 48.47; for the class of July, 1932, 48.67, and for the class of October, 1932, 45.10, or a general average for these four classes of 47.76%.

The consistency of these figures would seem to indicate that the question of the ability of the average American youth to make the grade as a military flyer is about a fifty-fifty proposition.

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DEMONSTRATION BY MARCH FIELD AT AIR RACES

Thirty-six planes, 18 Pursuit and 18 Bombardment, of the 1st Bombardment Wing, March Field, Calif., demonstrated coordinative attacks by three Bombardment Squadrons on a theoretical target in front of the grandstand during the Air Races at Los Angeles recently.

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SPECIAL ORDERS AFFECTING AIR CORPS OFFICERS

CHANGES OF STATION: To Bolling Field, D.C.: 1st Lieut. Townsend Griffis, from Randolph Field, Texas.

To Brooks Field, Texas: 2nd Lieut. John C. Gordon from Hawaiian Department.

To Crissy Field, Calif.: 1st Lieut. George E. Henry from Philippines.

To Barksdale Field, La.: Captain Russell L. Maughan from Philippines.

To Kelly Field, Texas: 2nd Lieut. Roger J. Browne from Panama.

To the Philippines: Capt. Marion L. Elliott, Langley Field; 2d Lt. Norman H. Ives, March Field.

To Hawaii: Captain Edwin R. Page, March Fld.

To Panama: 2nd Lts. Henry R. Baxter and Hansford W. Pennington from Kelly Field.

To Scott Field, Ill.: Lieut.-Col. Frank M. Kennedy, Maxwell Field, to assume command.

To Maxwell Field, Ala. Major Wm. O. Ryan from duty as student A.C. Tactical School.

PROMOTIONS: To Major: Capt. John G. Colgan, rank from July 1, 1933. To Captain: 1st Lt. James M. Gillespie, rank July 9, 1933. To 1st Lieut. 2nd Lt. Charles B. Stone, 3d, rank from June 24, 1933.

RETIREMENTS: Major Leo G. Heffernan, Capts. Roger S. McCullough, Edward Laughlin, to proceed to their homes to await retirement.

RESIGNATION: 2nd Lieut. Clarence Edward Enyart, June 26, 1933.

ASSIGNMENTS: Major Percy E. VanNostrand as Assistant Commandant, Air Corps Technical School, Chanute Field, Ill., vice Captain Samuel C. Skemp.

Col. Frank P. Lahm from duty as Assistant Military Attache for Air to duty as Military Attache, American Embassy, Paris, France.

ORDERS REVOKED: Assignment of Lieut. S.M. Umstead, Bolling Field, to Middletown Air Depot; Assignment of 2nd Lt. Frederick W. Castle, Selfridge Field, to duty as student at Air Corps Technical School, Chanute Field.

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Work on the new flying field (Wheeler Field, T.H.) is advancing rapidly. It is now completely sodded, the hangars have been accepted, although it is not intended to occupy them until the new grass has had sufficient time to take root.

AERIAL MAPPING OF BALER BAY AREA

MAPPING project was started several months ago, in conjunction with the Engineer Corps, of the Baler Bay Area, Tayabas Province, Island of Luzon. The T2A camera was used with four lenses in operation and at other times three. Existing maps of the area are incomplete and incorrect, the area containing mountains about 7,000 feet high not previously identified. Even two stream lines are substantially incorrect.

As practically the entire area is covered with forest of uniform growth and appearance and as the area has, in the past six months, been entirely free from clouds but one day after eight in the morning, the difficulty of flying courses as plotted may be imagined.

A company of Engineers camped in the area plotted certain control points in this beautiful virgin country. They reported very few people in the area, except in the town of Baler, and small barrios along the coast. The wild people are called "Ilongots" and are still in the original state, and there is little doubt that they will indulge in head-hunting.

A stranger in the wilds inhabited by these people has little chance of getting out alive, unless he travels with a large, well armed party, and even then the danger from poisoned darts and arrows is considerable.

Strangers are kept under constant and usually secret surveillance by the suspicious natives; and any breach of their customs, beliefs, superstitions or taboos, no matter how innocent or unintentional, places one in danger of attack.

Many distinct dialects are spoken in a distance of 200 miles, and as few natives understand more than their own and a few words of those of neighboring tribes, it is difficult to obtain guides who dare go with a party on a long trip.

The Philippine Constabulary in general does a fine job of keeping law and order among the semi-wild tribes by the maintenance of small patrol stations, and where possible enlisting a few of the more promising and influential youths of the different tribes. However, in these wild mountain districts where even the trails seem to have no beginning or end, there are large areas where an "Orlander" has never set foot and many of the natives therein have never seen persons other than those of their own tribe, perhaps not other than those of their own settlement of three or four roving families.

As it was found the four lens camera could not be mounted in the O-19, this photography was done from an O-2 when available and, when not, from a B-3A.

Equipment is carried which would be invaluable in case of a forced landing in these wilds. This includes bolos for cutting trails, medicines for various purposes, including that of destroying dysentery and cholera germs in water to make it potable, pocket compass, a Very pistol, etc. In addition, a shotgun, shells, bottle of matches and a frinction lighter, and salt were carried. The food problem in such a case is not serious, as many edible animals, birds, fish and reptiles, also fruits, may be easily found and eaten, if necessary, by one who knows how to catch and prepare them.

The problem how to make a safe forced landing in such an area was not fully worked out. If the crew "bailed out," the chance is slight that the plane and its contents could be located by them even if it struck within half a mile. The best chance is probably to land in one of the small rivers and take a chance of being able to travel. At least the crash would be easier to locate and get to.

Due to the "sameness" of print after print, the Engineers had considerable trouble making the map from the pictures. The opportunity to take pictures is fleeting. A radio report was sent whenever the weather seemed favorable, and the plane took off and proceeded for about 100 miles. By that time the clouds usually came in, but at times it was possible to do an hour's work before weather conditions became too bad for good photographic work.

A mark of 11,000 feet was set as the altitude, so that more time would not be lost in climbing but, of course, with a 7,000 foot mountain on one edge of the area, considerable distortion occurs.

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TRAINING ACTIVITIES OF 26TH ATTACK SQUADRON

The most interesting and probably the most valuable phase of the year's training, according to the correspondent of the 26th Attack Squadron, Wheeler Field, T.H., is the cooperative missions performed with other branches of the service. The correspondent goes on to say that this squadron has an unusual opportunity for working with ground troops because of its proximity to Schofield Barracks, and because most ground troop commanders desire their men to develop anti-aircraft defense and the proper discipline during an air attack.

The Squadron has accomplished a number of cooperative missions with the Field Artillery units of late. Most of these missions have taken the form of attacks on moving columns while the artillery units were moving into the field for their summer exercises and firing. Other attacks have been made upon camps, established gun positions and camouflaged positions. The experience and training gained by both the ground units and air units are extremely valuable. Both gain a better understanding of the capabilities and limitations of the other and the usual result is a considerable increase in their mutual respect for each other. The ground troops have succeeded in developing some very efficient defenses against air attacks. Their camouflage is extremely deceptive and often low flying airplanes will fly right over a battery so concealed without the pilot being able to locate a single man or gun even though he knows the approximate area in which the battery is located.

The development of efficient ground defense stimulates the air units to greater activity, especially in planning and executing their attacks to insure their being successful. The 26th Attack Squadron has tried a number of different tactics on these missions and the knowledge and experience gained from them has been invaluable to the pilots.

Besides actual attack missions, the 26th Attack Squadron has also been of great service to the Coast Artillery units in the Hawaiian Department by towing targets for the training of their anti-aircraft batteries. While the value of cooperation of this type is less direct than the other, it is an important phase of training because the effectiveness of present anti-aircraft fire is a subject of which few pilots have much knowledge. In case of actual operations during war time, anti-aircraft will be a dangerous hazard to all flying, and it is believed that all pilots who have the opportunity should study anti-aircraft batteries in action.

In addition to purely military missions, the 26th Attack Squadron has accomplished some valuable work for the Territory of Hawaii by scattering seeds for the Forestry Department. Most of the rugged mountains on the Island of Oahu are inaccessible from the ground. The Forestry Department is attempting to introduce trees of commercial value to take the place of the riotous wild growth that now covers the mountains. An hour's flight will accomplish more in distributing

these seeds than a month of exhausting effort by a large ground force. The motto of the 26th Attack Squadron during the past month could well be "Cooperation."

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CONDEMNED PARACHUTES PUT TO GOOD USE

The 111th Observation Squadron, Texas National Guard, received ten parachutes, condemned for human use, to be used in dropping 5-gallon milk cans loaded with supplies to marooned parties in the marshy coastal sections of Texas, or to carry food, drink and ammunition to them. Every year several parties of hunters get lost in the salt marshes along the Texas coast, and occasionally motorboat parties run out of gas and are hung up on some lonely isle or key. The ten milk can chutes are expected to come in handy in such instances.

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OBSERVATION SQUADRON MAKES GOOD IN NEW ROLE

At a conference prior to the Anti-Aircraft Exercises at Dayton, Ohio, expressions of doubt were voiced as to the ability of the Observation Squadron to understand and carry out its mission as set down. The old time-worn Observation procedure was done away with and the Observation had been detailed to function in an entirely new capacity - the supporting of air troops instead of ground troops.

The Observers from Mitchel Field more than justified their part in the Exercises.

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FLYING TACTICS BY HAWAIIAN PURSUITERS

The 18th Pursuit Group, Wheeler Field, T.H., recently staged a series of aerial tactics for the Commander of the 18th Composite Wing and his staff. This exhibition included every phase of tactical training covered by the training schedule for the year 1932-33, the purpose being to acquaint the new Wing Operations Officer, Major Michael F. Davis, with the units with which he would work during the forthcoming three years in the defense of the Hawaiian Group. Speed in response to alert calls was stressed. An excellent demonstration was made of communications by directing the 19th Pursuit Squadron by radio from the reviewing stand. The new short wave units are on hand and work was begun on their installation, but as yet all service units are still laboring with the old sets and there is continued interruption by the many service and commercial units operating in the Hawaiian Islands.

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17TH PURSUIT STAGES FLYING MANEUVERS

The 17th Pursuit Squadron recently returned to its home station, Selfridge Field, after a short stay in Chicago, where it took part in the Military Tournament held in conjunction with the World's Fair. The personnel of the Squadron were quartered at Fort Sheridan, Ill., while the planes were based at Sky Harbor during the four days' stay. Visitors to the Fair and to the Military Tournament held each evening at Soldier's Field were afforded the opportunity of watching the Squadron perform its maneuvers.

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91ST SQUADRON DISPENSES SMOKE

The 91st Observation Squadron, Crissy Field, Calif., recently conducted smoke screen experiments. Journeying by truck and air to Hamilton Field, they puzzled the farmers and ducks for miles around by producing a pretty good substitute for fog.

The problem of carrying a loaded tank from the filling point to the airplane was solved in the following manner: A rectangle of 1¼" airplane tubing, 9 feet long by 14 inches wide, was constructed with cross bars on the ends. Three movable iron straps support the tank. A wooden stand supports the assembly for filling. This arrangement permits easy handling of the heavy load.

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SELFRIDGE FIELD ASSUMES NEW APPEARANCE

New construction at Selfridge Field has proceeded at such a rapid pace that in the course of a month the post assumed an entirely new appearance. The most important new addition is the main Post Road, just completed and built of very solid concrete, taking the place of the old main road.

Hand in hand with the new construction, the improvements on the post are progressing rapidly. The street lighting system is entirely completed, and consists of 110 concrete light standards, placed at certain intervals along all roads. The entire waterfront along Lake St. Clair is being graded - a big job - for there is a frontage of 4,000 feet along the Lake. A stone walk will be built along the water's edge, grass sown and trees planted. Soon the view towards the Lake will be changed from the aspect of a refuse dump to that of a well laid out park.

The new Post Exchange is about ready for use, and a few weeks later the Officers' Mess and the Enlisted Men's Club will be open for business.

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INTERNATIONAL AIR RACES

The Army Air Corps will enter one balloon in the International Gordon Bennett Balloon Race, to be held in connection with the International Air Races scheduled for Sept. 1st to 4th, inclusive, at Chicago, Ill. First Lieut. Wilfred J. Paul, pilot, of Langley Field, Va., and Master Sergeant Joseph H. Bishop, aide, of Scott Field, Ill., were designated by the Chief of the Air Corps as the team to represent the Army in this International contest.

According to the National Aeronautic Association, invitations were extended to the Navy and to the Goodyear Company, of Akron, Ohio, to enter a team each, also that France, Germany, Poland and Belgium have indicated their intention to enter teams in this historic contest.

The Army team of Lieut. Paul and Master Sgt. Bishop won the National Elimination Balloon Race, which started on May 30th of last year from Omaha, Nebraska, by remaining aloft 26 hours and 46 minutes, landing at 1:00 a.m., June 1st, at a point 13 miles north of Hatton, Saskatchewan, Canada, approximately 901 miles north and west of Omaha.

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COOPERATION WITH OTHER BRANCHES

The 4th and 50th Observa

The 4th and 50th Observation and 65th Service Squadrons, 5th Composite Group, Luke Field, T.H., participated in airplane missions with the Hawaiian Seperate Coast Artillery Brigade during May, towing targets for anti-aircraft fire with a Sikorsky Amphibian and with O-19 Observation planes.

Cooperative missions were carried out by the 19th Pursuit Squadron, 18th Pursuit Group Wheeler Field, T.H., with the 64th Coast Artillery Corps, in addition to the regular squadron training.

Saturday, July 15th, was the birthday of the 34th and 73rd Pursuit Squadrons and 17th Pursuit Group Headquarters at March Field.

OBITUARIES

The personnel of Kelly Field have not as yet recovered from the loss of Captain Harold A. Moore, who was killed in an airplane crash on the morning of June 9th, while flying a P-12 on a local flying mission. The exact cause of the crash has not been determined. His death marks the first at Kelly Field since the death of Capt. Randolph in 1927, that is, a permanent officer assigned to this field.

Captain Moore, who enlisted in the Aviation Section, Signal Corps, on September 21, 1917, was born at Chicago, Ill., June 1, 1894. He attended high school at Evansville, Ill., for 4 years; Berea, Ky. College for 2½ years, and Ohio University for 2 years, receiving an A.B. degree from the latter institution. Following his graduation from Ground School at the Ohio State University, he was assigned to Rockwell Field, Calif., for flying training and, upon completion of same, was commissioned a 2nd Lieut. on May 14, 1918, and placed on active duty. From Rockwell Field he proceeded to Camp Dick, Dallas, Texas, where he served a short period, and then to Gerstner Field, La. He returned to Rockwell Field in August, 1918, and remained there until December, 1919, when he was transferred to March Field, Calif.

On July 1, 1920, Capt. Moore was appointed a 2nd Lieutenant, Regular Army, and was promoted 1st Lieutenant the same day. In January, 1922, he was ordered to duty in Hawaii. Completing this foreign service tour, he was assigned to Crissy Field, Calif. in April, 1925. Two years later, in April, 1927, he was transferred to March Field to pursue a course of instruction for flying instructors, following which he was assigned to duty at the Air Corps Training Center at Duncan Field, Texas.

Captain Moore had been stationed at Kelly Field since June, 1927. For several months prior to his death he was in command of the Headquarters Squadron.

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Lieut. Jerome P. Thompson, Air Reserve, attached to the 94th Pursuit Squadron at Selfridge Field, Mich., was killed in an airplane accident on the morning of June 17th, while he was engaged in a flight for the purpose of practicing combat maneuvers. Lieut. Thompson had been stationed at Selfridge Field since March 13, this year, and had already made a reputation for himself as a good pilot and an efficient officer. He had made many friends at the field.

Lieut. Thompson was born at Helena, Ark., February 20, 1909. He graduated from the University of the South, Sewanee, Tenn., with the degree of B.S., in 1927. Appointed a Flying Cadet, he commenced training at the Primary Flying School, Randolph Field, Texas, in March, 1932. He successfully completed the course both at the Primary Flying School and at the Advanced Flying School, Kelly Field, Texas, and, on February 24, 1933, he was commissioned 2nd Lieutenant, Air Reserve, rated "Airplane Pilot," and placed on extended active duty at Selfridge Field, Mich.

It was Major Brett's sad duty to notify of the tragedy Mr. and Mrs. Jacob Thompson of Helena, Ark., parents of the deceased officer. Major Brett said that Lieut. Thompson "showed much promise both as an officer and as as airplane pilot. His work while with the First Pursuit Group at Bowman Field in connection with the Anti-Aircraft - Air Corps Exercises in May was especially commendable. His loss will be keenly felt at Selfridge and by the Air Corps as a whole."

The name of Thompson unfortunately figured in another airplane accident, when 2nd Lieut. Keith A. Thompson lost his life in a crash on July 21st at a point approximately 20 miles southeast of Hallettsville, Texas, while on an authorized night avigation flight.

Lieut. Thompson apparently jumped from his airplane but, in all probability, his jump was at an altitude too low to save his life. The pilot 'chute was found resting on the top of a cypress tree, and the shrouds of the large 'chute were scarcely unfolded.

Lieut. Thompson, a native of Elano, Wis., was born on February 3, 1910. He graduated from the United States Military Academy on June 10, 1932, and was commissioned a 2nd Lieutenant of Infantry. The following month he was detailed to the Air Corps for flying training. He satisfactorily completed the course at the Primary Flying School, Randolph Field, graduating on June 30, 1933, and was undergoing the advanced course at the Advanced Flying School, Kelly Field, Texas, at the time of his death.

Lieut. Thompson's home was at Ogdenburg, Wisconsin.

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One of the most distressing accidents in the Air Corps in recent years occurred on July 25th, near Oceanside, Calif., when a C-6A (Amphibian) piloted by 2nd Lieut. Carl H. Murray, accompanied by six enlisted passengers, dropped a wing and crashed. None of the occupants of the ill fated Transport plane survived.

The plane left March Field at 11:40 a.m. for Rockwell Field and appeared over Oceanside at noon, when scores of people were in the streets. Witnesses said it was flying smoothly until it reached the south end of the town, when they saw a wing suddenly break away.

One witness, near whose house the crash occurred, said that her attention was attracted to the plane by a loud report when it was overhead. "I went outside and looked up," she said, "and saw what appeared to be small particles and smoke coming from the rear of the plane. I could see they were in difficulty and seemed to be coming down looking for a place to land.

"I heard a rasping noise, and the right wing tore away and went soaring off by itself. The main body of the plane floated an instant and then plummeted down in our pasture."

The occupants of the Amphibian besides Lieut. Murray were -

Sgt. Archie W. Snodgrass, 64th Service Squadron.

Sgt. Bonnell L. Herrick, 17th Pursuit Group Headquarters.

Corporal Walter T. Caylor

Private Stanley Book

Private Albert Overend

Private Vincent J. Galdis

All of the above-named personnel were stationed at March Field, Riverside, Calif., the last four named being members of the 95th Pursuit Squadron.

Lieut. Murray was born in McCook, Nebr., July 3, 1904. He graduated from the University of Idaho in 1928, and his home was in Filer, Idaho. Appointed a Flying Cadet, he graduated from the Primary Flying School, March Field, Calif., October 11, 1929, and from the Advanced Flying School, Kelly Field, Texas, February 28, 1930, being rated "Airplane Pilot," commissioned a 2nd Lieutenant in the Air Reserve, and placed on extended active duty at Rockwell Field, Calif. He was appointed 2nd Lieut., Air Corps, Regular Army on June 6, 1930.

ADVANCED SCHOOL GRADUATES ASSIGNED TO STATIONS

MEMBERS of the 17th class trained under the five-year program were graduated from the Air Corps Advanced Flying School, Kelly Field, Texas, on June 29th. An aerial review was held at 8:00 a.m., and the graduation exercises at 10:00 a.m. in the War Department Theatre.

Chaplain Edward R. Martin delivered the invocation and, following introductory remarks by Lieut.-Col. Henry B. Clagett, Commandant of the Air Corps Advanced Flying School, Brigadier-General Charles R. Howland, Commanding General of the 3rd Infantry Brigade, Fort Sam Houston, Texas, delivered an address. Brigadier-General Charles H. Danforth, Commanding General of the Air Corps Training Center, presented the diplomas. The exercises were concluded with a benediction by Chaplain Martin.

The class of 96 students commenced training at the Advanced Flying School on March 1, 1933, and the 91 successful students, who received their "Wings," were graduated in specialized training, as follows: Attack, 4 Flying Cadets; Bombardment, 21 Flying Cadets, 2 Noncommissioned officers; Observation, 1 Regular Army officer, 20 Flying Cadets; Pursuit, 2 Regular Army officers, 41 Flying Cadets.

Two fatal airplane crashes during the period of this class resulted in the death of Flying Cadets Herman S. Davis (Bombardment), and Charles D. Rogers (Observation). Three students, Cadets D.W. Pippinger (Attack), L.P. Ricks (Attack) and E.F. Tindall (Pursuit) will be held over for training with the next class.

The three officers of the Regular Army who were members of the graduating class were assigned to duty, as follows: 1st Lieut. R.P. Williams to Langley Field, Va.; 2nd Lieuts. John E. Barr and Joseph B. Zimmerman to the Philippines.

The graduating class completed their navigation training flights on June 24th, which wound up the final phase of training, and which the students always look forward to with keen anticipation, as the flights for each section cover a period of four days, including the maintenance day. All of the Sections, with the exception of Observation, followed this itinerary: Kelly to Fort Sill, Fort Sill to Fort Bliss, and return, with several stops at different stations for refueling and lunch. The Observation Section had maintenance day at Fort Sill instead of at Fort Bliss.

All Flying Cadets were discharged on June 30th and were placed on active duty temporarily at Brooks Field, under their Reserve commissions, pending final assignments to stations. Under Special Orders of the War Department recently issued, these new 2nd Lieutenants were assigned to stations, as follows, for the period of one year, ending June 30, 1934:

To Barksdale Field, La:

Willard Van Deman Brown	Jay Lanham Gentry
John Francis Davidson	Philip Beeton Klein
Walter Edward Davis	Jeff Coleman Mock
Samuel Cleveland Dunlap	
Hal Willoughby Gregory, Jr.	

To Crissy Field, Calif.

Eyvind Holtermann	George Henry Macintyre

To Fort Crockett, Texas:

James Thomas Connally Jean	Donat Grenier
William Silver Edgar	Andrew Monroe Wynne, Jr.

To Langley Field, Va.:

Howard Owen Aigeltinger	William T. Hudnell, Jr.
Edward Schwartz Allee	Roger Herman Kruse
William M. Altenburg	Bierne Lay, Jr.
Joe Earle Barton	James Britt League, Jr.
Henry Stoner Bear	Millard Ray Newland
Richard C.W. Booker	Franklin Kendall Paul
Homer Astley Boushey, Jr.	Francis Pope
George Kenneth Crain	Thomas Jones Schofield
Donald Bream Diehl	James Edwin Stroud
Harold Lucas Dietz	James Winfield Williams
Ladson G. Eskridge, Jr.	Edgar Milton Wittan
Stanley Currier Hoyt	Geo. W. Youngerman, 3rd.
James H.C. Houston	

To March Field, Calif.:

Edwin Davis Avary	Lowell Everett Heacock
Joel Lee Crouch	John S. Lambie, Jr.
Don Orville Darrow	Sterling Talley Love
John Patrick Donlin	Ray Albert Noland
Edward R. Dorsey, Jr.	Bernhard A. Schriever
James Young Eastham	Elmer Patrick Schwarz
Elwyn Herbert Gibbon	John Dodds Treher
Charles Lee Hamilton	Daniel Wm. Wickland

To Mitchel Field, N.Y.:

Howard Alton Cheney	Harold Lewis Jones
Charles Edw. Flaherty	George F. McDermott
Cyril Adrian Goyette	Wm. S. Pocock, Jr.
Elkins Hamilton Hale	Raymond Walter Wells

To Scott Field, Ill.:

Harold Austin Gunn	Lawrence S. Fulwider

To Selfridge Field, Mich.:

William Thomas Arthur	Charles Dean Manhart
Lloyd Herbert Bidwell	Herman G. Portman, Jr.
Newton Hunt Crumley	Everett Greeley Senter
Frank Howard Evans	Hamilton Smith, Jr.
Thomas J. Gaughen, Jr.	John F. Strickler, Jr.
John Holden Gibson	Edwin Averell Warren
Charles P. Hollstein	

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TRAINING FOR MORE RESERVE OFFICERS

Mainly through the unceasing efforts of the Reserve Officers Association of the United States, of which Col. Kemper Williams, Infantry Reserve, is National President, and Major Bennett A. Molter, Air Reserve, National Secretary, the President of the United States authorized the withdrawal of an additional sum of $1,000,000 from funds impounded for 14-days active duty training of Reserve officers. It is estimated that this additional sum will permit of the training of 7,400 additional Reserve officers of company grade.

There are at present 86,338 Reserve officers commissioned in the various Arms and Services on the Active Duty Assignable List, all of whom have met the professional requirements of their grade as laid down by the War Department. The second session of the 72nd Congress appropriated funds sufficient to train not less than 20,000 Reserve officers during the Fiscal Year 1934. The amounts made available to the War Department by the Director of the Budget were, however, curtailed so as to permit the training of but 3,151 Reserve officers. At present there are 1,672 Reserve officers on active duty with the Civilian Conservation Corps, making a total of 4,823, or approximately 5 percent of the total number of Reserve officers, eligible for training.

The authorization of additional funds to train 7,400 more Reserve officers will make it possible to provide active duty training for 12,223 Reserve officers this fiscal year.

The ultimate program of the Reserve Officers Association is to train every combat Reserve officer at least once a year.

It is stated that enrollments for membership in the Reserve Officers Association are now at an unusually low ebb. The efforts of the high officials of this organization have put forth to obtain this gratifying increase in the number of Reserve officers to be trained this Fiscal Year should meet with the approbation of every Reserve officer, and his support in a material way.

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The 113th Observation Squadron, Indiana National Guard, placed targets on the far side of their field for both forward and rear gun practice. This will give them an opportunity to take advantage of this type of training more than was possible in the past, when their aerial gunnery was largely confined to the summer camp period.

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During June at Patterson Field, Fairfield, O., 16 planes and 41 engines were given major overhauls, and 46 planes and 30 engines minor overhauls.

GENERAL BALBO'S RECEPTION AT BOLLING FIELD

(C) N July 20th, official Washington paid tribute to the intrepid Italians who, under the leadership of the youthful General Balbo, piloted the great Air Armada across the Atlantic, bearing a message of friendship and good will from Premier Mussolini to the American people.

The visit to Washington followed the huge reception given the fliers in New York and was a fitting climax to the many honors which had been bestowed by an admiring nation upon heroes whose accomplishment eclipses previous incidents of aviation history.

Bolling Field was given the privilege of first welcoming these distinguished airmen. When they stepped from the Army, Navy and Marine Corps planes, in which they had been flown from New York, fully 10,000 persons were at the field to obtain a glimpse of them, and many thousands of others from roof tops and from the streets watched the planes carrying the visitors, fly over the city on their way to the field. Several thousand of the visitors were Italian-Americans for whom space had been reserved.

At ten thirty the planes landed and taxied into position. As General Balbo and his officers slighted, a 19-gun salute was fired by Battery "C," 16th Field Artillery, of Fort Myer, Va. As the General came into view, a wild "Viva Balbo" came from the Italian-American section and was carried on through the crowd of spectators.

The General, accompanied by his staff and Col. Yount and Lieut. Robertson, then inspected the Guard of Honor, composed of Bolling Field troops. The Navy Band furnished the four ruffles and played the Facisti National Anthem. General Balbo was then taken to the area allotted to the Italian contingent. The wild enthusiasm of his own people left no doubt in the mind of the General and other spectators as to the pride and affection in which they held him and his brave fliers. Here and there hands reached out from the stand to touch the hero and many Italian women dropped to their knees as he passed.

Having afforded the Italian Nationals an opportunity to pay tribute to their flying General, Col. Yount then escorted him and his officers to a stand where he was officially welcomed by the Secretary of the Navy, the Italian Ambassador, the Assistant Secretary of War, the Acting Secretary of State, the Secretary of Commerce, the Assistant Secretary of Commerce (Air), the Chief of Naval Operations, the Chief of the Army Air Corps, the Assistant Chief of the Army Air Corps, Commandant of the U.S. Marine Corps, Chief of the Bureau of Aeronautics, Assistant Chief of Staff, G-2, the Commander, District of Washington, and the Director of Naval Intelligence.

Secretary Swanson, welcoming the General in the name of the President, said: "I extend to you and your companions the hearty greeting of the President of the United States, and all of the American people." The spectators who could manage to catch a glimpse of the immaculately attired General as he responded to this welcome, could not understand his reply, but the gracious smile which played over his face convinced them that he was glad to be here. In reply to the Secretary's welcome he had said: "I will leave herewith the undying impression of the friendship of America for my own country."

Secretary Woodring told General Balbo: "We are happy to greet you and your comrades on this epochal flight that has splendidly accentuated the warm feeling of friendship which exists between Italy and America."

Secretary Roper said: "We welcome you into our hearts and into our nation's capital." That is exactly what the people of Washington did. Few of the thousands present at Bolling Field could hear these speeches. They didn't care. They were content to stand on tiptoe and shout "Viva Balbo!"

Following the welcoming ceremony, General Balbo and his officers were placed in cars and accompanied by Army, Navy and Marine Corps officers and representatives of official Washington, the cavalcade passed in review before thousands of visitors at the field. Riding with General B.D. Foulois, Chief of the Army Air Corps; Rear Admiral Ernest J. King, Chief of the Bureau of Aeronautics, and Hon. Ewing Y. Mitchell, Assistant Secretary of Commerce for Air, he led the procession as it left Bolling Field. On all sides there was thunderous applause and wild "Vivas." His famous smile encompassed everyone.

Following the reception at Bolling Field, General Balbo was taken to the Mayflower Hotel from whence he left shortly for luncheon with the President of the United States. At the same time those officers not accompanying the General to the White House were entertained at luncheon at the Mayflower by the Overseas Writers Association and were later taken to the White House to meet the President. Army, Navy and Marine Corps officers and their wives were invited.

During the afternoon, General Balbo and his officers journeyed to the Tomb of the Unknown Soldier where General Balbo placed a wreath.

At four thirty, the Italian Ambassador afforded Washingtonians an opportunity to meet the distinguished visitors at tea.

Assistant Secretary Woodring and Secretary Swanson entertained the General and his officers at dinner on Thursday evening at the Army and Navy Country Club. The guest list included representatives from official and social Washington and many Army, Navy and Marine Corps officers and their wives.

It was at first planned that the fliers would be returned to New York by plane, but it was later determined that they should go by train following the reception and dinner.

Never since the return of Lindbergh had Washington more generously extended hospitality to distinguished visitors. General Balbo and each of his officers made a lasting impression, and Washington is now eagerly scanning the news columns for information concerning his return trip. We wish him Godspeed and "Happy Landings."

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ADDITIONAL HANGARS AT LUKE FIELD, T.H.

A most urgent need for housing facilities for Bombardment airplanes will be filled in the nery near future with the erection of two additional hangars at Luke Field, T.H. Work on their construction was recently started. This project, involving a contract totaling $37,500, included the dismantling of three hangars formerly in use by the 18th Pursuit Group at Wheeler Field, and the erection of two of them into complete units at Luke Field. The material of the third dismantled hangar will be used in the construction of lean-to additions to the present hangars of the 5th Composite Group.

Since January 18, 1933, when fire completely destroyed the hangar assigned the 23rd Bombardment Squadron, the planes of this organization were parked in the open and exposed to weather, causing undue deterioration and requiring frequent rigid inspections, as well as an increase in maintenance beyond that normally required for planes properly stored in hangars.

The completion of these two additional hangars will be anticipated with great interest by the two Bombardment Squadrons of Luke Field, the 23rd and the 72nd, which organizations will share the storage space and will again be able to return to normal operating conditions.

Radio

A radio test of the new SCR-183 sets, installed in P-12E planes, was recently conducted from Albrook Field, Canal Zone. One pilot proceeded north to France Field 40 miles distant, and another pilot flew west for a distance of 30 miles. These two officers maintained two-way voice communication until they were approximately 90 miles apart. The ground station at Albrook Field, which was equipped with an SCR 183, maintained communication with the northern plane throughout the test and with the western plane up to a distance of 60 miles. Conditions were not the best, as a local amateur station and a Colombian Commercial station interferred considerably. The pilots found these sets extremely simple to operate and adjust and the test indicated a great advance over any radio equipment heretofore installed. Of the six type SCR 183 sets at this station, five are installed in P-12E type airplanes and the sixth is used in the ground station until the completion of the installation of the type SCR 188 ground transmitter.

During the recent gunnery season at Albrook Field, the problem of a safety ship was efficiently solved. This was done by use of the new SCR 183 installed in P-12E's. The radio ship patrolled the range, which is three miles to sea off Old Panama, and maintained contact with the ground station at Albrook. The Sikorsky Amphibian or Douglas Dolphin were available during the firing period for rescue missions on call of the patrolling radio ship.

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The personnel of the Communications Department, Bolling Field, D.C., will be kept busy for several weeks installing the new 183 Airplane Radio Set in eight O-38F airplanes coming to this field. The new set makes communication between plane and ground a great deal more efficient, due to the compactness of the set, including a transmitter and several other features not included in the old style sets.

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The student officers and part of the instructional staff of the Department of Communications of the Air Corps Technical School, Chanute Field, Rantoul, Ill., recently proceeded to Chicago on an inspection visit, which included the electrical exhibits of A Century of Progress, the Majestic Company's Chicago plants and National Broadcasting systems.

Those making the trip, which was under the direction of Captain Malcolm N. Stewart, Acting Director of the Department of Communications, included: Mr. David Reeves (Lieut.-Col. Spec. Res.); Mr. Charles W. Richard, (Major, Air Res.); Lieuts. F.G. Allen and R.V. Williams, Air Corps, Instructors; and student officers Lieuts. W.L. Ritchie, M.E. Tillery, G.W. McGregor, J.J. Sprague, T.H. Baxter, E.J. Rogers, W.B.Blaufuss, H.G. Montgomery, E.A. Sirmeyer, Jr., and Lloyd H. Watnee.

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TECHNICAL SCHOOL STUDENTS AT WRIGHT FIELD

Thirteen officers of the Maintenance Engineering course at the Air Corps Technical School Charute Field, Rantoul, Ill., reported for ten days' duty at the Materiel Division, Wright Field, Dayton, Ohio, for the purpose of inspecting the engineering laboratories and receiving instruction in the various branches of engineering.

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HOW BRITISH ROYAL AIR FORCE PROPOSES TO UTILIZE RADIO IN TIME OF WAR.

How the Royal Air Force in time of war would coordinate intelligence exchanged between it and the British Army on the ground was recently illustrated in the maneuvers held at Old Sarum, England, under the direction of Major Gen. W.W. Pitt-Taylor, commander of the Third Division. In a long article on the maneuvers in general, the military correspondent of The Times of London has this to say on this particular phase:

"The exercise was well devised to test the system of staff work in obtaining information from the R.A.F. The air squadron headquarters was at Thrup, and there the 'intelligence liaison officer' (I.L.O.) of the division remained to instruct each pilot before he went up, and to examine him when he came down two hours later. The staff at divisional headquarters had to bear in mind the times when the pilots went up and take care to prime the I.L.O. with up-to-date information and special requirements for more. So it was essential to have to have a telephone wire from headquarters to the airdrome.

As the troops advanced they increased their distance from the airdrome, and a question of having an advanced landing-ground arose. So did the question of finding enough new telephone cable to run to it, as cooperation would break down unless the I.L.O. went forward to the place where the pilots landed.

The directing staff had with them the complete plan of the enemy's movements, carefully timed, and it was their business to decide how much the divisional General should be told about those moves. That depended (apart from visibility) upon the instructions which the intelligence liaison officer gave to the pilots about what to look for and where to look for it. It was all most realistic, as may be imagined.

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According to the Bolling Field correspondent, the Army Air Corps is constantly becoming more aware of the necessity of radio to the airplane. This can be visualized by the fact that all new transports are well equipped with the most modern of radio sets, have a compartment for the set and operator, and carry an operator on all long flights. Equipped in this manner, the plane is in constant communication with the ground, and in the case of a rapidly approaching storm or other type of bad weather the pilot is immediately notified by the radio operator. The pilot then uses his best judgment in proceeding or reversing his course. Radio is a safety factor that is a necessity on all planes.

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AIR CORPS STUDENTS VISIT INDUSTRIAL FIRMS

The 1933 Class of the Air Corps Engineering School, accompanied by the Assistant Commandant, recently took off from Wright Field in seven airplanes for a flying tour of various cities in which are located industrial concerns which produce aircraft or equipment under government contracts. This flight is an annual feature and part of the Engineering School course.

The industrial concerns visited were the Lycoming Engine Co., Williamsport, Pa.; Curtiss and Consolidated Aircraft Companies, Buffalo, N.Y.; Eastman Kodak and Bousch and Lomb Instrument Companies at Rochester, N.Y.; Chance Vought and Pratt and Whitney Companies at Hartford, Conn.; Wright Aeronautical Corp., Paterson, N.J.; Berliner-Joyce, General Aviation and Glenn L. Martin Companies at Baltimore, Md., and the N.A.C.A. Laboratories at Langley Field, Va.